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GE Nuclear Energy

ABWR

Date 5/1/92

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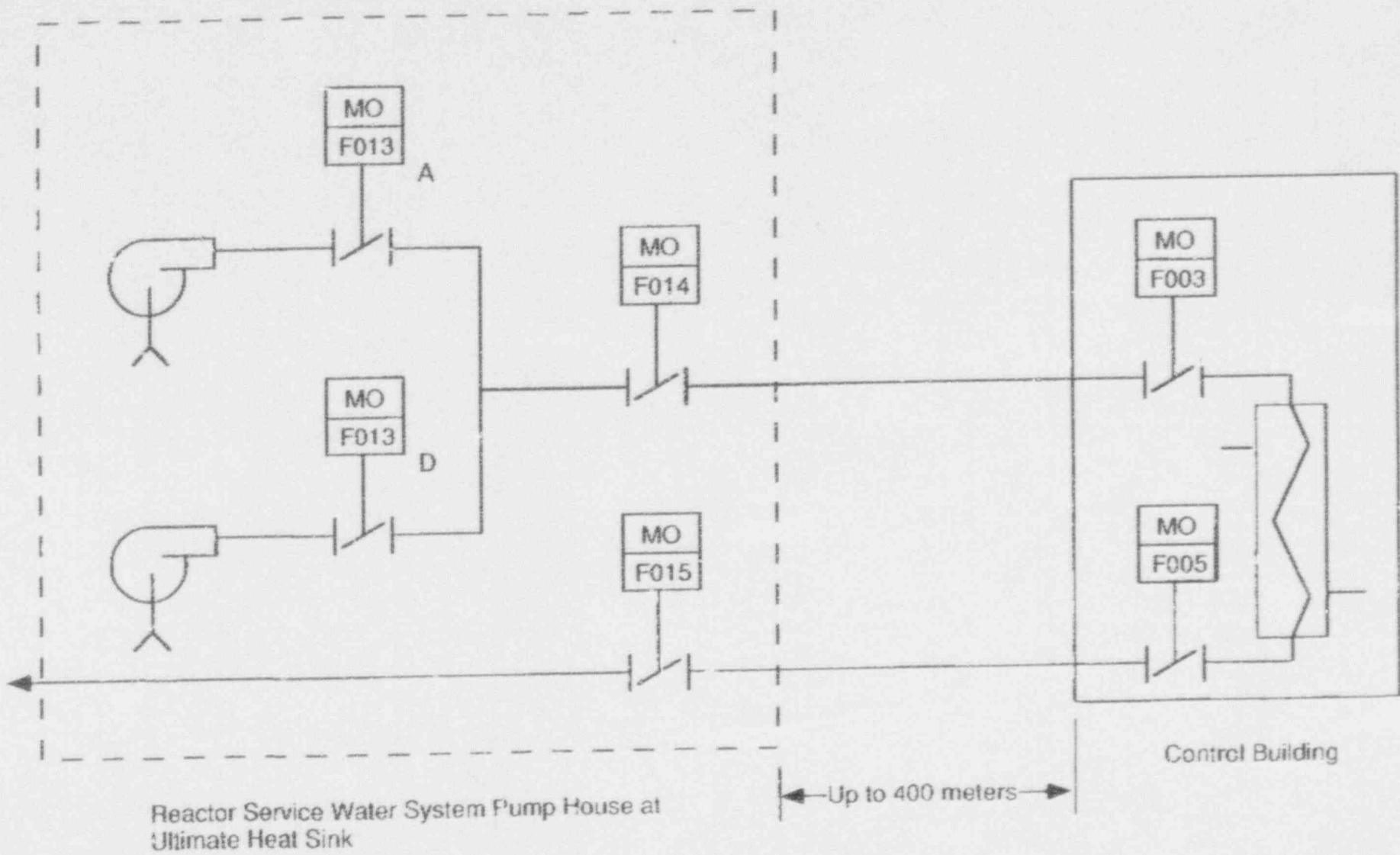
Subject Control Building Flooding

Message Attached for your information  
is a draft of the flooding  
analysis for potential piping  
leaks in the Reactor Service  
Water system

(Retransmitted with Figure added)

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PDR TOPRP EMVGENE  
C PDR

# CONTROL BUILDING FLOOD PREVENTION



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# DRAFT

Thereafter, some water will flow draining the pipe segment with the break and more water will flow if siphoning from the UHS occurs. The amount will depend upon the location of the break and whether any valves have failed to close. At all potential break locations, there is either two valves or one valve and the air break (at the UHS) between the break and the UHS. Thus, if a single failure is assumed, siphoning cannot occur. The largest pipe segment is about 400 meters which contains about 154 cubic meters.

In summary, The total amount of water which flows into the RCW/RSW room is 434 cubic meters which floods the room to an elevation of 1.23 meters. No motors or electrical equipment are flooded and no water leaves this room.

# DRAFT

## DESIGN DESCRIPTION

All floor drains in the control building flow into one of the RCW/RSW rooms in the lowest floor of the building. The RCW/RSW rooms are designed to be their own sumps. All motors and electrical equipment are located at least 1.4 meters above the floor and made splashproof or are suitable for use immersed. The area of each RCW/RSW room is 352 square meters. Each RCW/RSW room has water tight doors and can contain water up to 5.4 meters (or 1,900 cubic meters of water).

Diverse lower and upper water level sensors (with alarms in the main control room) are provided in each room. The lower level sensor is 0.15 meters above the floor. Its alarm alerts the operators that a problem exists that should be investigated. The upper level sensor is 0.8 meters above the floor. It stops all RSW pumps and closes all valves in that division and alarms in the main control room. These measures prevent flooding if a pipe break occurs in one of the RCW/RSW rooms as discussed below.

In each of the three RSW divisions, valves are provided to prevent siphoning of UHS water into the RCW/RSW rooms.

## FLOODING ANALYSIS

A "worst case" pipe break is assumed in one of the RCW/RSW rooms. The size of the break was calculated using the procedure in ANSI/ANS-58.2 and BTP MEB 3-1. The lower RCW/RSW room water level alarm would occur in the main control room about 6 minutes after the break occurs. If the operator does not take any action, the leak may continue until about 30 minutes after the break occurs when the water level reaches the sensor at 0.8 meters above the floor. An alarm will occur in the main control room, the RSW pumps in the affected division will be stopped and all motor operated valves in the affected division will be closed.

During the 30 minute period when the RSW pump is running, 280 cubic meters will flow into the RCW/RSW room.